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File: USPT

May 2, 1995

DOCUMENT-IDENTIFIER: US 5412087 A

TITLE: Spatially-addressable immobilization of oligonucleotides and other biological polymers on surfaces

Abstract Text (1):

Substrates with surfaces comprising compounds with thiol functional groups protected with a photoremovable protecting group can be used to construct arrays of immobilized anti-ligands, such as oligonucleotide probes or other biological polymers. The arrays can be used in assays to detect the presence of complementary nucleic acids in a sample. Spatially addressed irradiation of predefined regions on the surface permits immobilization of oligonucleotides and other biological polymers at the activated regions on the surface. Cycles of irradiation on different regions of the surface and immobilization of different anti-ligands allow formation of an immobilized matrix of anti-ligands at defined sites on the surface. The immobilized matrix of anti-ligands permits simultaneous screenings of a liquid sample for ligands having high affinities for certain anti-ligands of the matrix.

Brief Summary Text (14):

Novel methods and compositions of matter are provided for immobilizing oligonucleotides and other biological polymers on predefined regions of a surface of a solid support. The methods involve attaching to the surface a thiol functional group protected with a photochemical protecting group so that the thiol has very low reactivity for other functional groups reactive with thiols. The protected thiol is convertible by irradiation to a fully reactive thiol capable of immobilizing a desired biological polymer such as a nucleic acid, protein, or polysaccharide. Predefined regions of the surface are selectively irradiated to convert the protected thiols in the predefined regions to reactive thiol groups. The desired biological polymers subsequently can be immobilized on the activated regions of the surface.